AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A method for determining temperature of a transducer of an ultrasonic hand piece, comprising the steps of:

determining a shunt capacitance of the transducer comprising the steps of:

applying an ultrasonic drive signal to the transducer across a pre-defined frequency range;

measuring the hand piece impedance at fixed frequency intervals to obtain a measured impedance at each frequency interval;

performing a curve fit based on each measured impedance at each frequency interval to obtain a curve fit equation;

solving the curve fit equation at equally spaced frequency values to obtain a group of distinct impedance values;

calculating a shunt capacitance based on each distinct impedance value;

discarding a maximum and a minimum calculated shunt capacitance value to obtain a residual group of shunt capacitances; and

averaging the residual group of shunt capacitances to obtain a final shunt capacitance value of the hand piece;

calculating the temperature of the transducer based on the shunt capacitance of the transducer; and

providing a warning to a user of the hand piece if one of the temperature of the transducer and a rate of change of the temperature is excessive.

Claim 2-20 (Canceled):

Claim 21 (Withdrawn): The method of claim 1, wherein said determining step comprises the steps of:

applying an ultrasonic drive signal to the hand piece/blade across a pre-defined frequency range;

measuring a first hand piece shunt capacitance when a user first activates the hand piece/blade;

measuring a second hand piece/blade shunt capacitance when the surgeon deactivates the hand piece/blade;

calculating a time difference between when the hand piece/blade is activated and deactivated using a time when the first measured hand piece/blade shunt capacitance is obtained and a time when the second measured hand piece/blade shunt capacitance is obtained;

computing a rate of change value of the hand piece/blade shunt capacitance using the calculated time difference;

determining whether the rate of change value of the hand piece/blade shunt capacitance is greater than a predetermined threshold above a value stored in memory; and

providing a warning to the user, if the rate of change value of the hand piece/blade shunt capacitance is greater than the predetermined threshold above the value stored in memory.

Claim 22 (Withdrawn): The method of claim 21, wherein the predefined frequency range is from approximately 34 kHz to 44 kHz.

Claim 23 (Withdrawn): The method of claim 21, wherein said computing step comprises the step of:

dividing a difference between the first measured hand piece/blade shunt capacitance and the second measured hand piece/blade shunt capacitance by a difference in time between when the first measured hand piece/blade shunt capacitance is obtained and when the second measured hand piece/blade shunt capacitance is obtained.

Claim 24 (Withdrawn): The method of claim 21, wherein the predetermined threshold is a shunt capacitance rate of change value stored in memory.

Claim 25 (Withdrawn): The method of claim 24, wherein the predetermined threshold is 120 pF/min.

Claim 26 (Canceled)

Claim 27 (Currently amended): The method of claim [[26]] 1, wherein the curve fit is performed in accordance with the relationship:

$$Z_{HP} = af_o^2 + bf_o + c,$$

where a, b and c are constants which are calculated via the curve fit and f_o is a fixed frequency at which the hand piece impedance is measured.

Claim 28 (Previously presented): The method of claim 1, wherein the pre-defined frequency range is from approximately 34.5 kHz to 44.5 kHz.

Claim 29 (Currently amended): The method of claim [[26]] 1, wherein the fixed frequency interval is 50 Hz.

Claim 30 (Currently amended): The method of claim [[26]] 1, wherein the shunt capacitance is calculated in accordance with the relationship:

$$C_o = -\left(1/f_o\right) * \left(Z_{HP}^2 - 1/R_p^2\right)^{1/2} - (C_{v1} * C_{v2})/(C_{v1} + C_{v2}) + 1/(f_o^2 * L_t) - C_c - C_{pcb},$$

where C_o is the shunt capacitance, f_0 is a fixed frequency at which the hand piece impedance is measured, Z_{HP} is the hand piece impedance at the fixed frequency f_0, R_p is a value of a limiting resistor, C_{v1} and C_{v2} are values of voltage dividing capacitors, L_t is a value stored in memory of the generator which represents a transducer tuning inductor, C_c is a capacitance of a hand piece cable and C_{pcb} is a contribution of capacitance from a printed circuit board in the generator.

Claim 31 (Currently amended): The method of claim [[26]] 1, wherein the group of distinct impedance values comprises eleven impedance values.

Claim 32 (Currently amended): The method of claim [[26]] 1, wherein the equally spaced frequency values are spaced apart at 1000 Hz intervals.